

Papers from Dr. Th. Mortensen's Pacific Expedition
1914—16.

III.

Marine free-living Nematodes
from the Auckland and Campbell Islands.

By

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With Plates I—III.

Dr. Th. Mortensen has brought home a considerable number of bottom-samples from the different stations of his Pacific Expedition 1914—16. Of these samples there was picked out, among other material, a considerable quantity of free-living Nematodes which Dr. Mortensen was kind enough to forward to me for the purpose of having them worked out. As our knowledge of free-living marine Nematodes is very small, especially of the exotic forms of this group, the material of these animals collected by Dr. Mortensen is of considerable interest.

Though the sorting of the bottom-samples has not yet been finished, marine free-living Nematodes have been stated from the following localities; The Auckland- and Campbell Islands, New Zealand, New South Wales, The Philippine Islands, Japan, Hawaii, California and some other, more Northern localities of the Pacific coast of North America, Panama and the West Indies. It is to be expected that the study of this material — besides enriching science with a great number of unknown forms — will contrive to throw light upon the geographical distribution of this group of animals.

In agreement with Dr. Mortensen it was decided to work out the material according to localities. The first contribution which is found on the following pages deals with the marine free-living Nematodes from the Auckland- and Campbell Islands.

The next paper will deal with the New Zealand-Nematodes; it has been found suitable to put off the zoogeographical remarks till the issuing of that paper.

Molgolaimus n. g.

Small Anguillulidæ of a rather clumsy shape. The front end is tapering evenly to the head which is rounded and separated from the body by an inconspicuous constriction. The cuticle seems to be smooth, but possibly it is exceedingly finely striated transversally, a feature which I have not been able to ascertain. No setæ have been observed, not even in the front end. No eyes or lateral organs. Buccal cavity entirely lacking. As far as can be observed, the œsophagus is short and thin almost throughout its whole length; its first two thirds are, however, very indistinct; at its base it forms a conspicuous, globular bulb with a rather large cavity in its interior. It was not possible to ascertain whether another bulb was present in the middle of the œsophagus as might perhaps be expected. The nerve ring was not observed. Ventral gland seems to be lacking. The female organs are symmetrical, the ovaries reflexed. Vulva is situated somewhat cephalad to the middle. Spicules are exceedingly long and thin; they are filiform and highly flexible. No accessory piece is seen. Supplementary organ is lacking. Two tiny preanal papillæ were observed.

Molgolaimus tenuispiculum n. sp.

Pl. I, fig. 13. Pl. II, fig. 11. Pl. III, fig. 11.

Locality: Auckland Islands. North-arm of Carnley harbour. Clay.

Length: Female, 0,79 mm. Male, 0,75 mm.

Female: $\alpha = 24,7$. $\beta = 9,0$. $\gamma = 7,6$.

Male: $\alpha = 23,5$. $\beta = 9,4$. $\gamma = 9,4$.

Four specimens were captured, three females and one male.

The shape of the body is rather clumsy. In the first third the front-end tapers rather evenly; about at the level of the middle of the œsophagus it begins to taper more quickly towards the head which is separated from the body by an inconspicuous constriction. The tail is conical in its proximal half; its distal half forms a digitate prolongation (fig. 2).

The cuticle is smooth or possibly provided with exceedingly delicate transverse striæ. Under high magnifying power (Apochr. 2 mm) it seemed to me as if such a striation was perceivable, but it is possible that this was due to the pigment granules in the subcuticular layer. With certainty I was not able to settle this question. Setæ seem to be entirely lacking, not only on the body but even on the head. Nor have I been able to see any lips or papillæ. Eyes and lateral organs likewise seem to lack. There is no buccal cavity; the entrance to the mouth is only like a prick of a needle. Regarding this feature and the structure of the œsophagus I consider it probable that the animal is feeding exclusively upon liquids.

The œsophagus is at its base provided with a conspicuous bulb of globular shape, the interior of which forms a rather spacious cavity. For the rest the œsophagus seems to be rather thin, but it is very indistinct in the distal two thirds so that it has been impossible to me to ascertain whether another bulb is found near the middle or not. No nerve ring was observed. Ventral gland seems to be lacking.

The female organs are symmetrical and the ovaries reflexed. Only one shell-egg has been observed in each of the branches of the uterus. The vulva is found somewhat cephalad to the middle of the body. In a female the length of which makes 0,79 mm the vulva was situated 360 μ from the front end. The spicules are exceedingly long and filiform; they are highly flexible as is seen in fig. 11, Pl. III. There is no accessory piece nor supplementary organ. The length



Fig. 2. *Molgolaimus tenuispiculum*; tail of female.



Fig. 1. *Molgolaimus tenuispiculum*, ♀.

of the spicules makes 163 μ . Cephalad to the anogenital aperture two tiny masculine papillæ are seen the most caudad of which is situated 9 μ from the anus, the other one 12 μ more cephalad. The hind-part of the body of the male is strongly curved; only the tail itself is almost straight, a feature not common among Nematodes.

Oistolaimus n. g.

Body of a rather short and clumsy shape. The cuticle is finely striated and set with scarce hairs, spread apparently irregularly over the surface of the body. Head with one ring of fine hairs, the position of which is between the low lips which surround the mouth-opening. Lateral organ spiral-shaped and much like that known in the genus *Desmodora*; it is situated in the front end, just behind the lips. The buccal cavity is cup-shaped in its distal half; its proximal half, which is nearly cylindrical, is occupied by a short spear or arrow, the stem of which is slightly curved and which is provided with a barb on one side, much like that of a fish-hook. The arrow is no doubt protrusile, and strong muscles which evidently act as protractors are attached to its stem. The œsophagus is of equal width in its distal half, but its proximal part forms a large oval bulb, in the interior of which is found a cavity, but no valvular apparatus. Tail short and conical. The vulva is found behind the middle of the body. A rudiment of the ovary is seen at some distance behind the vulva. It is to be supposed that the ovary is single and that the place of this and of the uterus is caudad to the vulva.

Oistolaimus ferox n. sp.

Pl. I, figs. 2, 10, 11.

Locality: Auckland Islands. North-arm of Carnley harbour. Clay.

Length: 0.7 mm. $\alpha = 14_{,5}$. $\beta = 4_{,8}$. $\gamma = 9_{,5}$.

In the material from the North-arm of Carnley harbour was found a single female, not fully sexually developed. Though the specimen was in no good condition I resolved to deal with it on account of the interesting and easily recognizable construction of its buccal cavity, and because it represented a genus, hitherto not described.

The shape of the body is rather short and clumsy; it is of about equal width throughout its whole length, only gradually tapering near the extremities. The tail is conical and of medium length. In the preserved specimen the body is slightly curved and tail is bent inwards towards the ventral side of the abdomen.

The cuticle is very finely striated, but it has not been possible to see whether rows of points are present or not. Fine and delicate hairs are spread, apparently irregularly, over the surface. Just below the cuticle is seen a layer of pigment consisting of minute deep-brown granules; this layer is not covering all the surface of the animal, but is interrupted here and there for a space; in the tip of the tail it is entirely lacking.

The head is truncate and, as far as I have been able to ascertain, the entrance to the buccal cavity is surrounded by eight low lips in the intervals of which is seen a fine hair of almost the same delicacy and length as those spread over the body-surface. The lateral organ is found in the front-end, just behind the lips. It is spiral-shaped and much like the lateral organs known in the genus *Desmodora*; it is relatively small and consists of only one loop and a half; the spiral line of the outmost loop does not end freely but bends inwards to the fore-going loop, a feature known, besides in the species of *Desmodora*, in some *Cyatholaimi* too, viz. *C. ocellatus* de Man and *C. microdon* Ditl.; but the most characteristic properties of this organ in the species under consideration are the paucity of the loops and the smallness of the whole organ.

The buccal cavity is of a rather peculiar shape. In its distal half it is cup-shaped, broad and rather shallow. Its proximal part is cylindrical and contains a short spear or arrow the stem of which is slightly curved. In the front end this spear is pointed and provided with a sharp barb much like that of a fish-hook. To the proximal part of the arrow strong muscles are attached, pointing obliquely forwards and attached to the inside of the wall of the

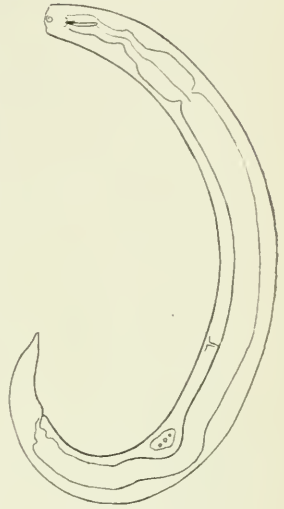


Fig. 3. *Oistolaimus ferox*. ♀.

buccal cavity; no doubt these muscles act as protruders to the arrow. Just in front of the arrow a ring-shaped chitinous thickening is seen, serving — in my opinion — to steer the arrow when protruded. The arrow itself is solid and is by no means to be compared with the spear known in other freeliving Nematodes viz. *Dorylaimi* or *Tylenchi*.

The œsophagus is of equal width in its distal half; its proximal part forms a large oval bulb in the interior of which a small cavity is seen. I am inclined to think that this bulb forms a sucking apparatus which may be able to bring the blood of the prey, wounded by the arrow, into the intestine of the Nematode. — The cells of the intestine are large and polygonal; they are filled with refringing granules.

No ventral gland has been observed. The vulva is found somewhat caudad to the middle of the body. The specimen being a young female not fully sexually ripe the genital gland is only found as a rudiment; it is situated just in the middle between the vulva and the anal opening and consists of a little, nearly egg-shaped syncytium with a few nuclei. It is to be supposed that the ovary is single and that the place of the female organ is caudad to the vulva in mature specimens, a fact not unknown in freeliving Nematodes.

Halichoanolaimus de Man.

Halichoanolaimus ovalis n. sp.

Pl. I. fig. 4. Pl. II. figs. 3, 7.

Locality: Auckland Islands. North-arm of Carnley harbour. Clay.

Length: 1,8 mm. $\alpha = 18$. $\beta = 7,5$. $\gamma = ?$

Only two specimens were secured, both of them females. The shape of the body is short and clumsy; it is of about equal width throughout its whole length. At the level of the base of the œsophagus the width begins tapering evenly towards the level of the bottom of the buccal cavity whence it continues more rapidly. The front end is truncate as is usually the case in this genus. In the hind part of the animal the body keeps its width until somewhat cephalad to the anal aperture, from where it tapers quickly. The shape of the tail somewhat resembles that of *H. robustus* Bastian,

but the filiform part of the tail being rather long it still more recalls that of *H. longicauda* Ditl.; from this species it does however differ in the feature, that the filiform part of the tail is bent inwards and forms a hook (fig. 4, Pl. I).

As in other species of this genus the cuticle is striated and in its deeper layer set with minute points. In the front end of the animal these points are larger and more prominent than in the other parts of the body; they are arranged in transverse rows, a feature which holds good in the greater part of the body; only in the hind-part the arrangement of the points is more irregular and the single rows more indistinct. Along the lateral fields the punctation is relatively coarse and grows finer dorsally and ventrally.

No bristles have been observed on the head; a ring of exceedingly tiny and delicate papillæ seems to replace them, but the number and arrangement of these latter I have not been able to ascertain. The lateral organ is spiral-shaped, as usual in this genus; in the species under consideration it forms a rather dense spiral, consisting of about six loops which are cephalo-caudad compressed, so that the long axis of the spiral is situated vertically on the longitudinal axis of the body.

The buccal cavity is of the well-known shape usual in this genus. It is divided in two parts, the foremost of which is more spacious and nearly funnel-shaped; it grows successively narrower towards the posterior part which is of about equal width until its base. The chitinous rods supporting it are rather thick and strongly chitinized. The œsophagus is of about equal width throughout its whole length. The nerve ring is indistinct but, as far as I have been able to ascertain, it is situated somewhat in front of the middle of the œsophagus. Regarding the roaming habit of the *Hali-choanolaimi* it is of some interest that the entire digestive tube is coated with a deep brown pigment layer. The intestine is more strongly pigmented than the œsophagus, especially the antevaginal part of the intestine. As to the œsophagus this feature is seen plainly in fig. 3, Pl. II.

Excretorial pore was not observed, nor ventral gland; but in all probability this organ does not lack as it is present in related forms. The vulva is found somewhat in front of the middle of the

body. The female organs occupy a large space in the body cavity. Vaginal glands, containing a coarsely granulated protoplasm, are present.

As the other species of this genus, the species under consideration is of a voracious habit. In the hindmost part of the intestine of one of my specimens is seen the chitinous skeleton of the buccal cavity of an *Oncholaimus*; the intestine of the other specimen includes the spicular apparatus of a *Parasabatieria Mortenseni*, a species described in this paper. *Halichoanolaimus ovalis* is evidently closely related to *H. robustus* Bastian and to *H. longicauda* Ditlevsen; the shape of the tail and the structure of the buccal cavity are mainly the same in these forms.

Aræolaimus de Man.

Aræolaimus spectabilis n. sp.

Pl. II, fig. 1. Pl. III, figs. 3, 9.

Locality: Auckland Islands. North-arm of Carnley harbour. Clay.
Length: 1,6 mm. $\alpha = 40$. $\beta = 8$. $\gamma = 20$.

Only one specimen was at my disposal, a female the length of which makes 1,6 mm. It seems to be rather closely related to the *A. microphthalmus*, described by de Man in 1893. Nevertheless I do not venture to refer it to this species, firstly because the tail of the species under consideration is considerably shorter than that of the species of de Man, and secondly on account of differences in the structure of the œsophagus. My species possesses just the „singulier élargissement elliptique“ which de Man found in his *A. bioculatus* from the Mediterranean but which in *A. microphthalmus* „fait complètement défaut“ (de Man l. c. p. 7). On the other hand it is not possible to refer the Auckland-species to de Man's *A. bioculatus*, the lateral organs being entirely different in structure in the two species. Possibly it will prove suitable to separate from the genus *Aræolaimus* the two Mediterranean species of de Man on account of the divergent shape of their lateral organs. In these two species the lateral organ is circular, while in *A. bioculatus* and in *A. spectabilis* it is loop-shaped. In his paper, dealing with the Nematodes from the Barentssea, Steiner called attention to the lateral organs of this genus in as much as he

hesitated in referring a species *A. Cobbii* to it because of the lateral organ not being spirated as in *A. elegans*. I shall remark here that, if all the species hitherto described as *Aræolaimi* really belong to this genus, we shall have the phenomenon of a genus in which four — at least three — different types of lateral organs occur. Even if we do not count the *A. Cobbii* Steiner we shall have *A. elegans* with spiral-shaped lateral organ, *A. bioculata* and *A. mediterranea* with circular lateral organ and *A. microphthalmus* and *A. spectabilis* with loop-shaped lateral organ. Without for the present entering

on a discussion of the relationship of these forms I shall however only here call attention to the strange feature that an organ, having, as far as I am aware, hitherto generally been considered as of generic value among Nematodes, exhibits such an inconstancy in a single genus.

In the species under consideration the shape is much like that of *A. elegans*; the body is rather slender and attains its greatest width in the neighbourhood of the vulva, where it is somewhat expanded by the reproductive organs. In the front end it begins to taper at the level of the base of the œsophagus; then it tapers evenly to about at the level of the excretory pore where it begins tapering more quickly. In the region of the ventral gland and at the level of the ampulla for the excretory duct the body is somewhat expanded (fig. 5).

The cuticle is smooth. The irregularly scattered setæ, often seen in this genus are very scanty in the species from the Auckland Isl. and mainly restricted to the front end. On the head four setæ are seen, arranged in one ring. More caudad, at the level of the lateral organ, two longer bristles are seen and behind them two more, subventrally situated. The eyes are of about the same shape as in *A. microphthalmus* de Man; their place is 40 μ caudad to the front. The lateral organ is, as above mentioned, loop-shaped

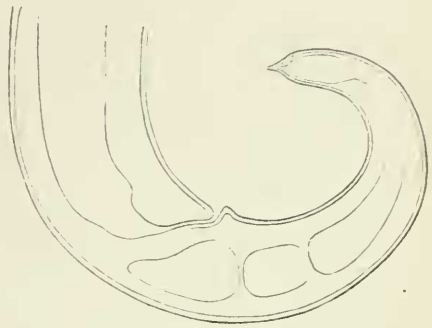


Fig. 4. *Aræolaimus spectabilis*;
tail of female.

and much like that described by de Man in his *A. microphthalmus*. It is situated about 5μ behind the front.

The buccal cavity is very narrow, almost tubular. The œsophagus, the length of which makes 200μ , has immediately caudad to the eyes a bulb-like dilatation recalling the wellknown bulb in the middle of the œsophagus in the Rhabditidæ. It is almost ovoid in shape and includes a cavity. The nerve ring is very distinct and situated 120μ from the front end. At its base the œsophagus narrows strongly, and its proximal end forms a blunt cone projecting somewhat into the lumen of the intestine. This is spacious, and its cells are filled with strongly refringing granules.

The ventral gland is in the Auckland species very large and occupies a considerable space in the body cavity; it forces aside the intestine and compresses it strongly. In its interior a large nucleus with a little refringing nucleolus is seen. The excretory duct opens 24μ from the front end by a fine tube issuing from a rather large, pear-shaped ampulla.

The vulva is situated somewhat cephalad to the middle of the body. The ovaries are symmetrical and reflexed.

Parasabatieria de Man.

Parasabatieria Mortenseni n. sp.

Pl. II, fig. 2.

Locality: Auckland Islands. North-arm of Carnley harbour. Clay.

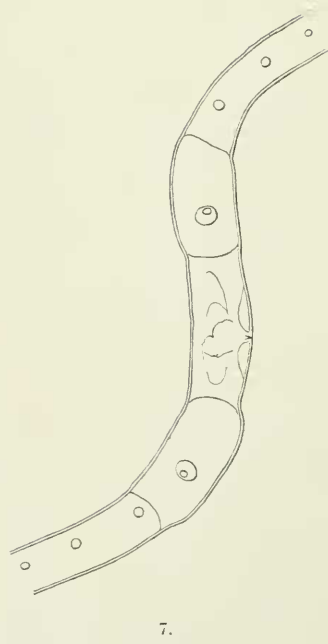
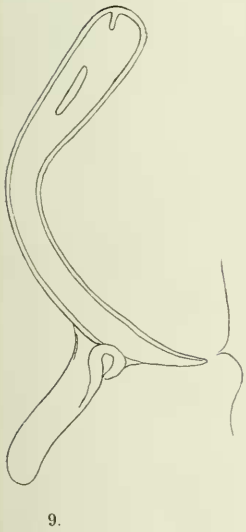
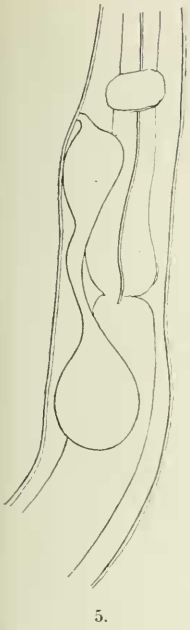
Length: Female 2 mm. Male 1.9 mm.

Female: $\alpha = 45$. $\beta = 9$. $\gamma = 16$.

Male: $\alpha = 46.5$. $\beta = 9.3$. $\gamma = 15.5$.

A considerable material of this species is at my disposal, in all 16 males and 39 females.

The body is rather slender and of about the same width throughout the greater part of its length. The head is — as is the case too in the genus *Sabatieria* — separated from the body by a conspicuous constriction. In both sexes the tail is rather short; it tapers evenly from the anal opening and ends in a little dilatation on the tip of which the duct of the caudal glands opens. In the region of the genital organs the body of the female is often considerably expanded by these; also the ventral gland, which is of



Parasabatieria Mortenseni. Fig. 5. Ventral gland. Fig. 6. Tail of female. Fig. 7. Female organs. Fig. 8. Hindpart of the body of the male. Fig. 9. Spicular apparatus.

considerable size, is able to expand the body locally; this holds good for both sexes. Probably the cuticle is most finely striated, but it has proved impossible to ascertain this, even with immersion lens; as, however, the closely related forms usually have a striated cuticle, it is reasonable to presume that this is also the case in this species.

The head is provided with a single ring of rather long bristles sublaterally arranged, four in all; they are inserted at the level of the front-edge of the large lateral organ just as in the very closely related European species *P. vulgaris*, described by de Man in 1907. On the body I have vainly searched for spread hairs. In the male are seen three rather stout setæ on the tip of the tail and one caudad to the ano-genital aperture (Fig. 8). The lateral organ is spirated; it is of different size in the male and the female, a feature evidently not uncommon among freeliving Nematodes. While in the male the diameter of the spiral makes c. 10 μ , it only measures 4—5 μ in the females. Moreover it is very indistinct in the females and often very difficult to observe. For the same reason my measurements of this organ do not claim to be fully correct.

The buccal cavity is very small and cup-shaped as in the other species of this genus; it seems to be devoid of a tooth. The œsophagus is of equal width in its distal part; caudad to the nerve ring it increases slightly, and at its base an inconspicuous dilatation is seen. The nerve ring is situated somewhat behind the middle of the œsophagus, and a short distance caudad to the nerve ring the excretory tube is opening; it is issuing from a rather large ampulla. The ventral gland is situated behind the œsophagus and is pear-shaped. The duct is very short, and the ampulla not much smaller than the gland itself (fig. 5). The caudal glands are presumably cephalad to the anal opening as in some other Nematode genera e. g. *Symplocostoma*; in some of the specimens I have in the body cavity observed three globular cells (?) which I consider to be the above named glands.

The vulva is situated in about the middle of the body; it is rather inconspicuous and often difficult to see; it is as a rule to be found by means of the two coarsely granulated vaginal glands which are easily perceived. The ovaries are symmetrical, but their

ends do not seem to be reflexed, a feature stated for related forms by de Man and Steiner.

The spicular apparatus is much like that of *P. vulgaris*, especially the spicules themselves; but there is a decided difference between the accessory pieces in the two forms. The accessory piece in *P. vulgaris* is almost conical and tapers rather evenly towards the tip, in *P. Mortenseni* it is rod shaped and somewhat curved in its distal end; in this species a peculiar loop is furthermore seen in its proximal end, formed by a projecting chitinous list which is entirely lacking in *P. vulgaris*. The preanal papillæ, the number of which is six in this species, are arranged in two groups, one consisting of two, the other of four papillæ. Between the two groups there is a distance of c. 56 μ . The two papillæ in the hindmost group are separated 24 μ from one another, and the most caudad of them is 24 μ from the anogenital aperture. The four papillæ in the second group are arranged more densely, only being separated 10—12 μ from one another.

As remarked above it is beyond doubt that the species in consideration is closely related to the *P. vulgaris* de Man from Penzance in England, but several facts tend to make me at any rate provisionally prefer to maintain the Auckland form as specifically different from the English species. Firstly the difference in size, the English species attaining about one third more in length. Secondly the above named differences in the structure of the accessory piece, and finally the differences concerning the masculine papillæ; de Man does not name the number of these in *P. vulgaris* but he remarks that „les papilles préanales semblent être situées à des distances à peu près égales“, a feature that does not at all hold good for the Auckland species.

Sabatieria de Rouville.

Sabatieria tenuispiculum n. sp.

Pl. II, figs. 6, 8.

Locality: Auckland Islands. North-arm of Carnley harbour. Clay.

Length: Female 1,3 mm. Male 1,6 mm.

Female: $\alpha = 44$. $\beta = 7,0$. $\gamma = 10$.

Male: $\alpha = 42$. $\beta = 8,7$. $\gamma = 9$.

The species seems to be rather closely related to *S. tenuicaudata* Bastian, but it diverges so much in some respects that I do not venture to refer it to this species. First it is considerably smaller, the average size being about half that of Bastian's species; secondly the œsophagus is somewhat longer and the tail considerably longer in proportion to the body-length than is the case in *S. tenuicaudata*. Also the supply of setæ in the front end is rather different in the two species.

The shape of the body is slender and highly resembles that of Bastian's species. It is of about equal width during the greater part of its length. In the foremost half of the body it is tapering slowly towards the front end. In the hindmost half it is tapering in the same way unto the anal aperture. The tail is conical in its proximal half, then it tapers quickly, and the distal half is thin and of equal width until the tip, where it is somewhat expanded. The shape of the tail is much like that of *S. tenuicaudata*, but in proportion to the body-length the tail of the Auckland-species is considerably longer.

The cuticle is transversely striated and set with points. As de Man states, these points are lacking on the head and irregularly spread behind the lateral organ; for the rest they are arranged more or less regularly in transverse striæ, except in the anal region where their arrangement also seems to be quite irregular.

On the head is situated a crown of long and stout setæ, each accompanied by a somewhat smaller one, inserted immediately behind the large one. Besides these, long, fine hairs are seen spread over the surface of the body, especially in its foremost part. The lateral organ is spirated and, as in the foregoing species, it is larger in the male than in the female.

The buccal cavity is cup-shaped and much like that of *P. tenuicaudata*. The œsophagus is somewhat swollen in its posterior end, but for the rest of about equal width. The nerve ring is rather indistinct; it is situated somewhat behind the middle, and, immediately behind this, the tube of the excretory gland opens.

As to the ventral gland I shall only remark, that the duct is short just as in the preceding species, and the ampulla rather large. I am not able to state with certainty anything about the

caudal glands, but I suppose that they are situated a considerable distance cephalad to the anal aperture, and that they open by means of long ducts at the tip of the tail as is the case in some other genera.

The female organs are symmetrical, the ovaries are not reflexed; I think that this last-named feature will prove to hold good for the greater part of the species belonging to the two nearly

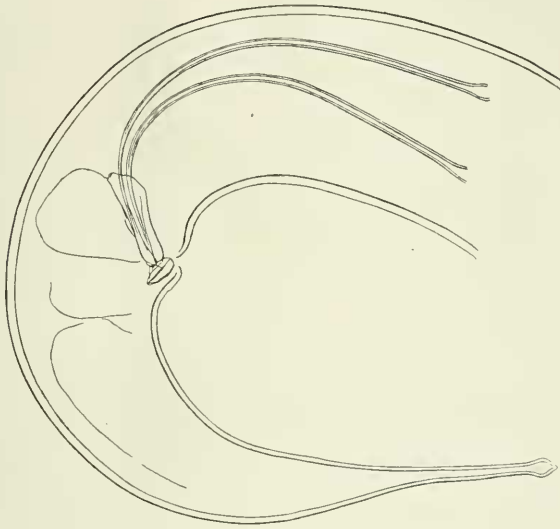


Fig. 10. *Sabatieria tenuispiculum*.

related genera *Sabatieria* and *Parasabatieria*. For *S. prædatrix* de Man states the same; he writes l. c. 1907 p. 65, about the said species: „Les tubes génitaux sont symétriques, non repliés“. And Steiner communicates for his *S. longiseta* l. c. 1906, p. 595: „So viel ich unterscheiden konnte, sind die Ovarien einfach ausgestreckt und nicht zurückgeschlagen“. The vulva is situated somewhat behind the middle in the species under consideration. It seems as if the usual place of the vulva in *Sabatieria* and *Parasabatieria* is somewhat in front of the middle. In *S. prædatrix* it is „située juste au milieu du corps“ as states de Man, and in *S. tenuispiculum* we have a species in which it is situated behind the middle. In this species the part of the body in front of the vulva compared to

the part behind the vulva is as 6 to 5. A strongly granulated gland is situated in front of and a similar one behind the vulva.

The spicules are long and slender and rather strongly curved (fig. 10). The length of the spicule from its proximal end to the distal tip, measured in a straight line, makes 112 μ . As far as I have been able to ascertain there are two accessory pieces, one of which is embracing the distal part of the spicule and forming a slide for it. The length of this piece is 27 μ . The other piece is small and situated immediately caudad to the ano-genital aperture.

Spilophora Bastian.

Spilophora amokuræ n sp.

Pl. I, fig. 6. Pl. II, figs. 4, 5.

Locality: Auckland Islands. North-arm of Carnley harbour. Clay.

Length: Female 2 mm. Male 1.5 mm.

Female: $\alpha = 48_{,3}$. $\beta = 7_{,1}$. $\gamma = 7_{,0}$.

Male: $\alpha = 37$. $\beta = 7_{,4}$. $\gamma = 11$.

Some specimens — males as well as females — are present. As far as I can see, they cannot be referred to any known species of the genus *Spilophora*. The shape of the body is — especially in the female — rather thick in the middle and tapers towards both ends. Cephalad to the vulva it tapers rather quickly until some distance behind the base of the œsophagus; from here it only tapers inconspicuously till the front end.

The cuticle is thick and coarsely striated; it is set with points or oval figures, arranged transversely in striæ. The thick cuticle behaves rather particularly in the front end, where it ends abruptly at the middle of the head; the striæ and the points cease at the level of the base of the buccal cavity (Pl. II, fig. 4). More caudad the cuticular points become more lengthened and at the same time more densely situated than in the front end; in the middle of the body they seem to suggest longitudinal striæ, interrupted by the transverse striæ. The entrance to the buccal cavity is surrounded by a ring of minute papillæ, and a ring of fine setæ are situated about in the middle of the head, just where the thick cuticle is ending. The buccal cavity is rather long and narrow, and the dorsal

tooth prominent and acute. The œsophagus is rather thin and of about equal width throughout the greater part of its length. At its base it forms an oval, muscular bulb. No valvular apparatus is found in this bulb, as the textfigure 11 seemingly suggests. The nerve ring is situated somewhat cephalad to the middle of the

œsophagus; it is rather indistinct and is not seen in the figure.

The vulva is found somewhat in front of the middle of the body. As far as I have been able to ascertain, some minute vaginal glands are present. The ovaries are symmetrical and reflexed. The spicules are curved and rather thick in their proximal end, where they are provided with a little knob. They are tapering rather quickly towards the middle, and their distal half is rather thin (Pl. I, fig. 6). Accessory pieces present, the number of which I have not been able to ascertain. Their distal part is forming a sheath; ventrally two apophyses with truncate ends are seen. Dorsally two others with acute tip and rather long. There are no preanal papillæ.

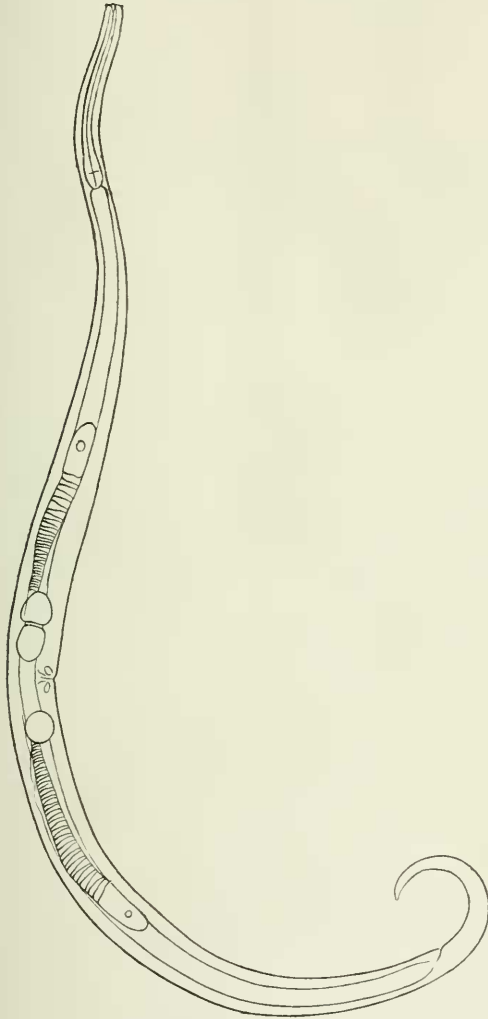


Fig. 11. *Spilophora amokuræ*.

Desmodora de Man.

Desmodora aucklandiæ n. sp.

Pl. I, figs. 8, 9.

Locality: Auckland Island. North-arm of Carnley harbour. Clay.
Length: 1.3 mm. $\alpha = 31$, $\beta = 8$, $\gamma = 13$.

Of this species only three females were obtained, none of which seem to be fully sexually developed. It appears to be a rather small form, almost of the size of *Desmodora scaldensis* de Man to which it is probably closely related, though it differs from this species in some important respects. Its shape is rather slender;

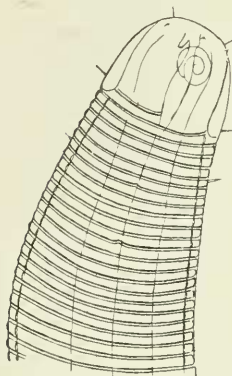


Fig. 12. *Desmodora aucklandiæ*; head.

the body is somewhat expanded in the œsophageal region, behind which it tapers. In the ovarian region it is rather considerably expanded so that it recalls the Chætosomes, a likeness which is made the more conspicuous through the habit of these animals to keep their bodies more or less bent. Behind the ovarian region the body tapers again. The tail is somewhat differing in shape from that of *Desmodora scaldensis*; in this latter it tapers rather evenly from the anal aperture to the tip, in *D. aucklandiæ* it tapers evenly to about three fourths of its length from the anus, then it begins to taper more quickly unto the tip.

The cuticle is coarsely annulated and the annulation is the most pronounced in the foremost part of the body, the intervals between the striæ being larger here.

The head is provided with a ring of scarcely perceptible papillæ and with two rings of bristles, one of which is found in front of the papillæ. The number of the bristles in this ring is, as far as I have been able to ascertain, only four, situated sublaterally, and the number of the papillæ is presumably six; of these latter two are situated laterally and the others subventrally and subdorsally. The hindmost ring also consists of four bristles and is found near the hind-edge of the head. Other bristles are found on the neck somewhat behind the head (fig. 12), but for the rest the body seems to be devoid of hairs.

The lateral organ is spirated, rather small and of a shape somewhat different from that of *D. scaldensis*; the outmost loop

does not end free, but bends inwards and touches the next loop (fig. 12).

The buccal cavity is rather narrow and the dorsal tooth is of a somewhat different shape from that of *D. scaldensis*; it is rather longer, more acute and prominent. The œsophagus is rather narrow in its foremost part, at its base it forms a distinct bulbus, cephalad to which is seen the rather indistinct nerve ring.

The vulva is situated at about the middle of the body. The ovaries are symmetrical and reflexed.

Oncholaimus Bastian.

Oncholaimus carnleyensis n. sp.

Pl. I, figs. 3, 7.

Locality: Auckland Islands. North-arm of Carnley harbour. Clay.

Length: 2,5 mm. $\alpha = 63,5$. $\beta = 6,7$. $\gamma = 10,7$.

Only a single female was found in the material. The shape is slender, almost filiform; it resembles somewhat that of *O. glaber*, described by de Man in 1889, but it is more slender, and a closer examination proves that the likeness is more superficial, and that the two forms are rather different in several important respects. While in *O. glaber* α makes 40—45, it makes 63,5 in the Auckland species.

The front end is in shape a little different from *O. glaber*; in this latter the head is nearly truncate and the mouth is surrounded by six lips each of which bears a minute papilla. In *O. carnleyensis* the head is rounded and there is no trace of lips. The cuticle is smooth, as usually in this genus. Bristles seem to lack entirely even on the head, and in this feature the two forms well agree. The cephalic papillæ, mentioned by the above named author in *O. glaber*, I have not been able to observe in the Auckland form, not even with Apochr. 2 mm; notwithstanding this, it is possible that exceedingly small papillæ may be present. The lateral organ is not very distinct, but it seems to be of about the same size and shape as in *O. glaber*.



Fig. 13. *Oncholaimus carnleyensis*; tail of female.

The buccal cavity is relatively long and narrow. The teeth are long and pointed; the subventrally situated tooth on the right side is the largest. The œsophagus is of about the same width throughout its length; only in its hindmost part it increases somewhat towards its base. The nerve ring is found in the middle of the œsophagus and is very distinct; immediately behind it the excretory pore is found. In the foremost part of the œsophagus, a short distance behind the buccal cavity, is found a valvular apparatus described by de Man in all the species belonging to the subgenus *Viscoria*. Whether it is of quite the same structure as in *O. glaber* or differing in some respects, I am not able to state.

The vulva is found somewhat in front of the middle; the antevaginal part of the body is in proportion to the postvaginal part as 14 to 17. The female organs are symmetrical and the ovaries are reflexed.

? *Oncholaimus viridis* Bastian.

Pl. I. figs. 1, 5.

Locality: Auckland Islands. North-arm of Carnley harbour. Clay.
Length: ♀ 3,9 mm. $\alpha = 65$. $\beta = 7,5$. $\gamma = 50$.

Two female specimens are present. The shape is slender and filiform; the body is in preserved specimens spirally involute. It is of about the same width throughout its whole length; at about the level of the base of the buccal cavity it tapers abruptly to wards the front. The tail is rather short and conical.

The cuticle is smooth, and bristles are only seen in the foremost part of the animal. On the head is found a crown of six rather stout setæ, arranged in the usual manner. More caudad two, submedially situated bristles are seen; I suppose there are four in all, but I have not been able to ascertain this. Besides the here mentioned bristles, I have not observed any such scattered over the anterior part of the body as Bastian states in *O. viridis*.

The buccal cavity is rather spacious and its walls are strongly chitinized. The teeth are rather broad at their base; the left subventral tooth is the largest one. The œsophagus is rather long and of about equal width throughout its whole length. Toward its base it increases somewhat in its proximal half. The nerve ring is found immediately in front of the middle.

The excretory duct opens somewhat cephalad to the base of the buccal cavity, 30 μ from the front end. There is a pear-shaped ampulla, the greater part of which is protoplasmatic. The chitinous excretory tube is rather long. The ventral gland is found a considerable distance caudad to the base of the œsophagus; in the larger of the two specimens, the length of which makes 3,9 mm, it is situated c. 170 μ caudad to it.

The vulva is situated 2,8 mm from the front end, that is to say a considerable distance caudad to the middle of the body. The female organ is asymmetrical and found in the body-cavity cephalad to the vulva. In the uterus four shell-eggs are seen. The distal part of the ovary is reflexed.

It is with some hesitation that I refer this species to the *O. viridis* of Bastian. With the insufficient material at my disposal and considering the somewhat compendious description of Bastian, I am not able to settle the question with certainty.



Fig. 14. *Oncholaimus viridis?*
tail of female.

Thoracostoma Marion.

Excepting some questionable forms, the species belonging to this genus are well characterized and form a very natural group. Nevertheless it is possible among the hitherto described species to point out some species which are more closely related to one another than to the other species of the genus. I shall not enter more thoroughly on this question here, but only point at the two species described by de Man in the results of the Belgica-Expedition, *T. setosum* v. Linst. and *T. antarcticum* v. Linst. These two forms are mutually closely related, and much closer related to each other than f. inst. to the forms from the Mediterranean described by Türck and by Marion. Perhaps it would prove to be justifiable to form a special group, possibly a subgenus for these two species, and to this group the European species *T. figuratum* Bastian, described by de Man, would also have to be referred.

In the material from the Auckland- and Campbell Islands are found three new species, all seeming to belong to the *T. figuratum*-group. It is rather interesting that five species, known from the Southern hemisphere thus are all closely related.¹⁾

Thoracostoma Campbelli n. sp.

Pl. III, figs. 1, 2, 5.

Locality: Campbell Island. Perseverance harbour. The coast at ebb-tide; under stones.

Length: Female 16,5 mm. Male 15,2 mm.

Female: $\alpha = 70$. $\beta = 6$. $\gamma = 105$.

Male: $\alpha = 76,8$. $\beta = 6,5$. $\gamma = 115$.

The shape of the body is slender, almost filiform. In the foremost end it tapers from about at the level of the base of the œsophagus. In the hind-part the body is keeping its width unto the anal region. The tail is very short and rounded. A characteristic feature for this species is that a rather considerable constriction is found in the front end about at the level of the lateral organ, which recalls the well known constriction in the genus *Sabatieria*.

The cuticle is smooth and relatively thick.

On the head — in front of the constriction — a ring of ten short, conical setæ is seen. It seems as if these ten bristles are found in most of the known species of this genus, and arranged in the same way. On each side a single bristle is found laterally situated, and the other eight are arranged in four groups of two bristles each. The two of these groups are situated subventrally, the other two subdorsally. In front of the setæ is seen a ring of four rather large papillæ, sublaterally situated.

The cephalic mail is of the usual shape. In each of the six lobes there are, as a rule, two locules to be seen, but occasionally there are found three of them. In fig. 2, Pl. III is seen that the lobe dorsally to the lateral organ has



Fig. 15. *Thoracostoma campbelli*; tail of female.

¹⁾ Also the *T. polare*, described by Cobb from the Shackleton Expedition is to be referred to the *T. figuratum*-group.

three locules, in another specimen it is the lobe, situated ventrally to the lateral organ, that has three locules; there seems to be no fixed rule for that. The species is easily recognizable on the band of minute, polygonal chitinous granules which is found immediately behind the cephalic mail. The species under consideration has this feature in common with the *T. figuratum*, but from this form it is distinguished by the fact that it has the above named cephalic constriction which lacks entirely in *T. figuratum*.

In the œsophageal region the cuticle is set with numerous papilliform setæ, arranged in longitudinal rows. The lateral row only consists of a few setæ which are not so regularly arranged as those in the subdorsal and subventral rows.

The two eyes each form a cyathiform pigment spot in which a lens has had its place. As there is no lens to be seen now it is to be supposed that it has been diluted by the preservation fluid or has disappeared in some other way. At any rate it is not uncommon that preserved specimens of freeliving Nematodes prove to be deprived of their eye-lenses. The distance from the front end to the eyes is in a female of this species measuring 16,5 mm c. 128 μ , and in a male, the length of which makes 15,2 mm, c. 120 μ . The lateral organ which is as usual situated immediately caudad to the single lateral cephalic bristle, is pear-shaped and measures in longitudinal diameter c. 9 μ . The lateral fields are in this species, as in most species of this genus, characterized by the large glandular cells, already observed and described by several investigators. In the species under consideration the lateral fields are, in some specimens, rather strongly pigmented with granules of a deep, brown colour; this pigment can locally be so dense that it hides the organs below and impedes the investigation.

The œsophagus is rather long as in related species. It has its broadest width at the base and tapers evenly towards the front. The nerve ring is rather distinct; it is situated at the limit of about the first third of the œsophagus.

The vulva is situated a considerable distance caudad to the middle. In a female, the length of which makes 13,8 mm, its place is 10,6 mm from the front end. It forms a large transverse slit. In some of the female species the surroundings of the vulva are covered with a layer of a granulated mass, probably the rests of

an adhesive fluid which during the copulation serves for fixing the male bursal region to the body of the female. The feature would thus — according to my opinion — be analogous to what is known



Fig. 16. *Thoracostoma campbelli*: spicular apparatus.

in certain insects as copulation-markings, viz. the Dytisci. The female organs are symmetrical and the ovaries are reflexed. Only two eggs are found in each uterus-branch of the females at my disposal. The hindpart of the male is bent inwards in this and related forms. In the mid-line, ventrally, a papilla is situated with the opening for the gland which Jägerskiöld has named „*accessorische Drüse*“ and which, according to the same author, serves as an organ of fixation during the copulation. I think that this organ, in spite of its somewhat different structure, is to be considered as homologous to what is commonly called the supplementary organ in the Enoploids and other genera of freelifving Nematodes. Besides the supplementary organ a subventral row of large mamma-shaped papillæ is found in this species on each side, each row counting five papillæ. These „bursal papillæ“ are found in most of the Thoracostomes belonging to this group;

they are found in *T. papillosum* also described in this paper, and de Man states their presence in *T. setosum* as well as in *T. antarcticum*. The spicules are rather short and thick, and on their ventral edge a rather thin crest is seen. They are provided with a thickening-list in the middle. From the proximal end to the distal tip is a length of 200 μ . A rather large accessory piece embraces their distal ends and is provided with a backwards pointing, somewhat curved apophyse.

Thoracostoma papillosum n. sp.

Pl. I, fig. 12. Pl. II, figs. 9, 12. Pl. III, figs. 6, 8, 10.

Locality: Campbell Island. Perseverance harbour. The coast at ebb-tide; under stones.

Length: Female 21,8 mm. Male 18,7 mm.

Female: $\alpha = 55$. $\beta = 8$. $\gamma = 130$.

Male: $\alpha = 63$. $\beta = 7.5$. $\gamma = 113$.

This is the largest of the Thoracostomes from the Auckland and Campbell Islands. But though the female attains the considerable length of more than two centimeters it does not come up with other species from the Southern Hemisphere; thus *T. setosum*, described by de Man from the Belgica-Expedition has a length of almost three centimeters.

The shape of the species under consideration is much like that of the above described species: the body is, however, not quite so slender. In the front end the body is tapering somewhat more strongly; the head is truncate and no constriction is found. The cephalic setæ are short and conical and are arranged in the usual way. In front of the bristles, near the front end of the head, there is a ring consisting of six papillæ two of which are placed laterally, the other four respectively subdorsally and subventrally. They are very small and semiglobular in shape. Whether the corresponding nerve is surrounded by a chitinous sheath, as presumed by de Man in *T. setosum*, I have not been able to ascertain. Perhaps I ought to add that concerning this feature de Man is not quite convinced; he writes: „le filet nerveux de chaque papille est entouré par un petit tube chitineux, à ce qu'il m'a semblé.“

The cephalic mail resembles somewhat that described by de Man in *T. antarcticum*, but it is not possible to confound the two forms, on account of the peculiar sexual armature found in the male of the Auckland species. The posterior edge of each lobe is rounded and has a feeble incision in the middle, but small anomalies are however common; lobes with two incisions are rather often seen. Also lobes without any incision are found. In each lobe two, nearly reniform, locules are found.

In the œsophageal region are found longitudinal rows of dense, conical setæ, more or less regularly arranged. These setæ are shorter than those on the head and are perhaps, as de Man remarks concerning related forms, more correctly to be named papillæ. The eyes are large and form — as



Fig. 17. *Thoracostoma papillosum*: tail of female.



Fig. 18. *Thoracostoma papillosum*; male papillæ.

in the preceding species of this genus — cyathiform heaps of pigment and seem to have contained a lens. They are situated 160μ behind the front end, measured on a female of $21,8$ mm. In a male of $18,7$ mm the same distance makes 152μ . The lateral organs are perhaps somewhat more lengthened than in *T. campbelli*. The longitudinal axis makes c. 12μ , the transverse axis makes c. 7μ . The œsophagus is rather long; it is of about equal width in its foremost half whereafter it increases evenly towards its base. The nerve ring, which is very distinct, is situated somewhat more cephalad than in the *T. campbelli*, at the level of about the first fourth of the length of the œsophagus.

The vulva is situated a considerable distance caudad to the middle of the body. In a female, the length of which makes $21,8$ mm, the place of the vulva is $14,3$ mm behind the front end. The dilatator muscles are highly developed and rather large, piriform glands, consisting of a single cell each, open into the vulva. A feature characteristic of this species is the large number of eggs, seen in the uterus. In one of the largest females I count no less than 43 shell-eggs, a fertility very seldom seen in freeliving Nematodes.

The hind-part of the body of the male is incurved, as usual in this genus. In front of the ano-genital aperture the papilliform supplementary organ is seen. The structure of this is seen in fig. 8, Pl. III. There is a chitinized opening for the glandular secretion. I have not succeeded in observing the gland itself, but according to Jägerskiöld, it is lying very deep in the tissue, only perceivable on sections. The distance of this papilla from the ano-genital opening is c. 112μ . There are only two bursal papillæ on each side in this species. They are situated a considerable distance cephalad to the supplementary organ; the hindmost one thus is found c. 224μ in front of the ano-genital aperture, and the distance between the two papillæ makes c. 160μ . Some distance cephalad to these papillæ a square part of the ventral side of the cuticle is found covered with very dense papillæ the shape of which is conical and with

rounded or acute tips. Under low power it looks as if this piece of the cuticle were covered with hairs and quite shaggy (fig. 6, Pl. III) but seen under high power it proves to be covered with papillæ of a rather different shape, wherefore I find it perhaps misleading to call them hairs. Some of these are rounded, nearly globular, others more lengthened, almost ovoid, some have an acute tip and the rest are more or less conical, lengthened and hair-like. They are most densely crowded in the ventral midline, where their shape is also most hair-like. Their length is varying considerably: the longest attain 12—15 μ . In my opinion there can be no doubt that this feature is in connection with the sexual functions. It is only seen in the males and is quite unique among freeliving Nematodes. It lends a very curious aspect to the body-part in question, which looks as if it were covered with a soft fur. The spicules are seen in fig. 19. They are in shape somewhat differing from those of *T. campbelli*, and the apophyse of the accessory piece is much larger than in this species.



Fig. 19. *Thoracostoma papillosum*:
spicular apparatus.

Thoracostoma aucklandiæ n. sp.

Pl. II, fig. 10. Pl. III, figs. 4, 7.

Locality: Auckland Islands. North-arm of Carnley harbour. Clay.

Length: Female 12.3. Male 8.5 mm.

Female: $\alpha = 64$. $\beta = 6$,s. $\gamma = 110$.

Male: $\alpha = 65$. $\beta = 6$. $\gamma = 87$.

While both of the above described species of Thoracostomes were captured in the Campbell Islands, this originates from the Auckland Islands.

As to the shape of the body this form is rather slender, though not so slender as *T. campbelli*. In the front end it is tapering rather evenly towards the front, and the head is truncate as in *T.*

papillosum. The cephalic setæ are arranged in the manner wellknown in this genus, one laterally, two subventrally, and two subdorsally on each side. I am not able to state with certainty whether papillæ are present or not; at any rate they must be exceedingly small; even with immersion lens I am not quite sure that I have perceived them. But in analogy with related species there ought to be a ring in front of the cephalic setæ. The cephalic mail is easily recognizable, from the fact that no locules are found in the lobes. The interlobular spaces are of a rather characteristic form. While in the Thoracostomes these spaces are commonly more or less circular, in the species under consideration they are oblongly ovoid, and each space is provided with a backwards directed off-shoot in the lobe on each side. The



Fig. 20. *Thoracostoma aucklandiæ*; tail of female.

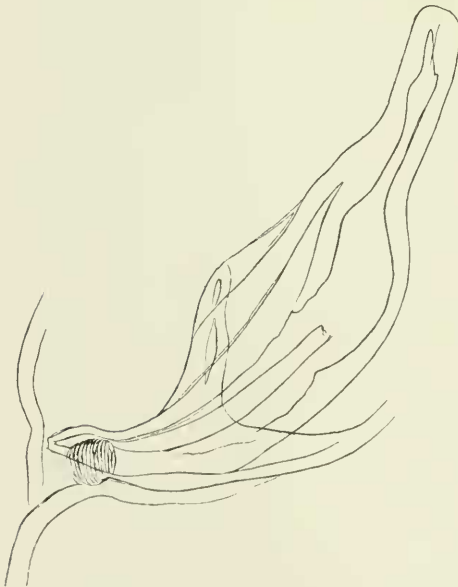


Fig. 21. *Thoracostoma aucklandiæ*; spicular apparatus.

lateral organ is almost pear-shaped and relatively of about the same size as in the foregoing species. The eyes are large and of the same cyathiform shape as described above. Caudad to the cephalic mail small, papilliform setæ arranged in longitudinal rows are situated. As stated by de Man these longitudinal rows are mainly situated subventrally and subdorsally; only a few bristles are seen caudad to the lateral organ. These rows are only found in the œsophageal region.

The female pore is situated

— as in all here described Thoracostomes — a considerable distance behind the middle of the body. In a female of a length of 12,3 mm its place is 8,8 mm caudad to the front end. Vaginal glands are rather large. This species does not seem to be so prolific as the above described species, only six shell-eggs being found in one female. The egg is here considerably larger than in *T. papillosum*. The hind-part of the body of the male is bent inward just as in the two species described above. The supplementary organ is situated about 65 μ cephalad to the genital aperture. Subventrally on each side a longitudinal fold is found. On each of these „bursal folds“ — as I will name them — a row of strong setæ is situated (Pl. II, fig. 10). These „bursal setæ“ are conical and very acute and found in a number of 15—16 on each side. The bursal folds which reach from immediately cephalad to the anogenital aperture have a length of about 320 μ . Cephalad to these folds two bursal papillæ are seen on each side.

The spicules are much like those of the other species described in this paper. They are slightly curved, of considerable width and have thickening-lists in the middle. The accessory piece is V-shaped; seen in profile there are two apophyses, one pointing forwards and the other pointing backwards; close by the distal tip is seen an outgrowth of nearly globular shape with its surface rather coarsely rifled (fig. 21).

Thoracostoma elegans n. sp.

A quite young specimen of a Thoracostoma, originating from the Campbell Island, has proved to be specifically identic with a species of which a rather great material has been taken by the investigation steamer „Thor“ in the Skagerrack. This species will be described together with the material of the Ingolf Expedition under the name of *T. elegans* n. sp.

Besides the species dealt with on the foregoing pages there were present in the material from the Auckland Islands some specimens, not suitable for a closer investigation; they proved to belong to the following genera: *Cyatholaimus*, *Enoplolaimus* and *Linhomoeus*.

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¹⁾ Only when this manuscript had gone to press I received from Dr. N. A. Cobb his paper: „Antarctic marine free-living Nematodes of the Shackleton Expedition, Baltimore 1914.

Explanation of plates.

Pl. I.

- Fig. 1. *Oncholaimus viridis* Bastian? Head. Winkel Homog. Imm. 2,2 mm. Comp. Oc. 4.
- „ 2. *Oistolaimus ferox* n. g. n. sp. Vulva and ovarium. Winkel Homog. Imm 2,2 mm. Comp. Oc. 4.
- „ 3. *Oncholaimus carnleyensis* n. sp. Zeiss Obj. AA. Oc. 2.
- „ 4. *Halichoanolaimus ovalis* n. sp. Tail. Zeiss Obj. DD. Oc. 2.
- „ 5. *Oncholaimus viridis* Bastian? Female Organ. Zeiss Obj. C. Oc. 2
- „ 6. *Spilophora Amokuræ* n. sp. Spicules. Zeiss Apochr. 2 mm. Comp. Oc. 4.
- „ 7. *Oncholaimus carnleyensis* n. sp. Head. Zeiss Apochr. 2 mm. Comp. Oc. 8.
- „ 8. *Desmodora aucklandiæ* n. sp. Tail. Winkel Homog. Imm. 2,2 mm. Comp. Oc. 4.
- „ 9. *Desmodora aucklandiæ* n. sp.
- „ 10. *Oistolaimus ferox* n. g. n. sp. Front end. Zeiss Apochr. 2 mm. Comp. Oc. 4.
- „ 11. *Oistolaimus ferox* n. g. n. sp. Tail. Zeiss Apochr. 3 mm. Comp. Oc. 4.
- „ 12. *Thoracostoma papillosum* n. sp. ♂ Subventral papilla. Zeiss Apochr. 2 mm. Comp. Oc. 4.
- „ 13. *Molgolaimus tenuispiculum* n. g. n. sp. Front end. Zeiss Apochr. 2 mm. Comp. Oc. 4.

Pl II.

- Fig. 1. *Aræolaimus spectabilis* n. sp. Front end. Zeiss Apochr. 2 mm. Comp. Oc. 4.
- „ 2. *Parasabatieria Mortenseni* n. sp. Front end. Zeiss Apochr. 2 mm. Comp. Oc. 4.
- „ 3. *Halichoanolaimus ovalis* n. sp. Front end. Zeiss Apochr. 2 mm. Comp. Oc. 4.
- „ 4. *Spilophora Amokuræ* n. sp. Head. Zeiss Apochr. 2 mm. Comp. Oc. 4.
- „ 5. — — — ♂ Tail. Zeiss Obj. DD. Oc. 2.
- „ 6. *Sabatieria tenuispiculum* n. sp. Head. Zeiss Apochr. 2 mm Comp. Oc. 4.
- „ 7. *Halichoanolaimus ovalis* n. sp. Zeiss Obj. B. Oc. 2.
- „ 8. *Sabatieria tenuispiculum* n. sp. Front end. Zeiss Apochr. 3 mm. Comp. Oc. 4.
- „ 9. *Thoracostoma papillosum* n. sp. Head. Zeiss Obj. E. Oc. 2.
- „ 10. — *aucklandiæ* n. sp. ♂ Tail. Zeiss Obj. B. Oc. 2.
- „ 11. *Molgolaimus tenuispiculum* n. g. n. sp. Ovarium. Zeiss Apochr. 3 mm. Comp. Oc. 4.
- „ 12. *Thoracostoma papillosum* n. sp. Ovarium. Zeiss a*, Oc. 2.

Pl. III.

- Fig. 1. *Thoracostoma campbelli* n. sp. ♂ Tail. Zeiss Obj. C. Oc. 2.
 „ 2. — — „ Head. Winkel Homog. Imm. 2,2 mm.
 Comp. Oc. 4.
 „ 3. *Aræolaimus spectabilis* n. sp. Vulva. Zeiss Apochr. 2 mm. Comp.
 Oc. 4.
 „ 4. *Thoracostoma aucklandiæ* n. sp. ♂ Supplementary organ. Winkel Ho-
 mog. Imm. 2,2 mm. Comp. Oc. 4.
 „ 5. *Thoracostoma campbelli* n. sp. Vulva and surroundings. Zeiss Obj. C.
 Oc. 2.
 „ 6. *Thoracostoma papillosum* n. sp. ♂ Tail.
 „ 7. *Thoracostoma aucklandiæ* n. sp. Winkel Homog. Imm. 2,2 mm. Comp.
 Oc. 4.
 „ 8. *Thoracostoma papillosum* n. sp. Supplementary organ. Winkel Ho-
 mog. Imm. 2,2 mm. Comp. Oc. 4.
 „ 9. *Aræolaimus spectabilis* n. sp. Ventral gland. Winkel Homog. Imm.
 2,2 mm. Comp. Oc. 4.
 „ 10. *Thoracostoma papillosum* n. sp. Vulva.
 „ 11. *Molgolaimus tenuispiculum* n. g. n. sp. ♂ Tail. Winkel Homog. Imm.
 2,2 mm. Comp. Oc. 4.
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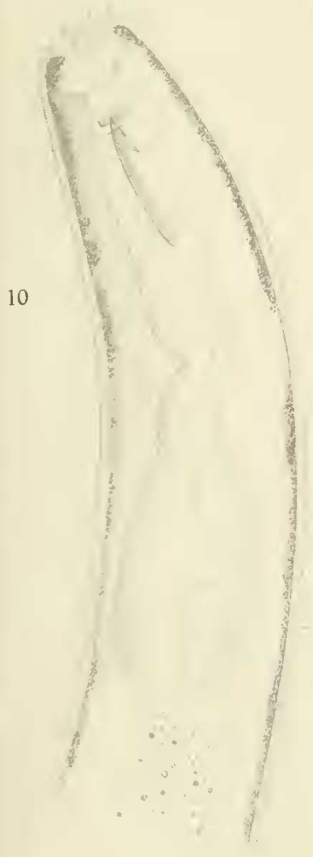


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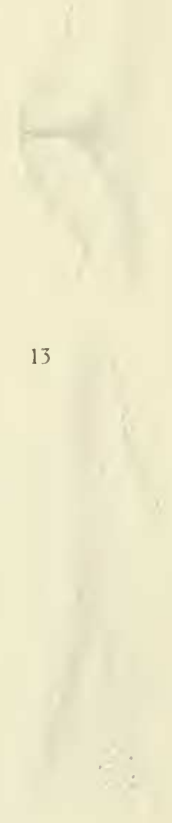
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